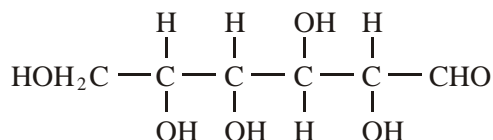


## TBD05 – IB Question Review #2 MS

1. (a)



1

No penalty for “sticks” or for OH groups written back-to-front, eg. OH- instead of HO-.

(b) the –OH group on the first carbon atom is inverted in β-glucose

1

(c) one (amylose) is a straight chain polymer whereas the other (amylopectin) is branched; one (amylose) has only 1,4 bonds (between the monomers) whereas the other (amylopectin) has 1,4 and 1,6 bonds;

2

(d)  $M_r$  for sucrose = 342;

$$\text{heat evolved} = 0.631(\text{kg}) \times 4.18 (\text{kJ kg}^{-1} \text{K}^{-1}) \times 6.22(\text{K}) = 16.4 \text{ kJ};$$

$$\text{calorific value} = \frac{16.4 \times 342}{1.00} = 5.61 \times 10^3 \text{ kJ mol}^{-1};$$

3

Allow answers in range 5610 to 5620.

Penalize for more than 5 sig. figs.

ECF from incorrect  $M_r$ .

[7]

2. (i) hydrogen bonding;

1

(ii) van der Waals' forces/hydrophobic interactions/dispersion forces;  
ionic bonding/(formation of) salt bridges/electrostatic attractions;  
covalent bonding/(formation of) disulfide bridges;

2 max

Award [1] each for any two.

Do not accept sulfur bridges on hydrogen bonding.

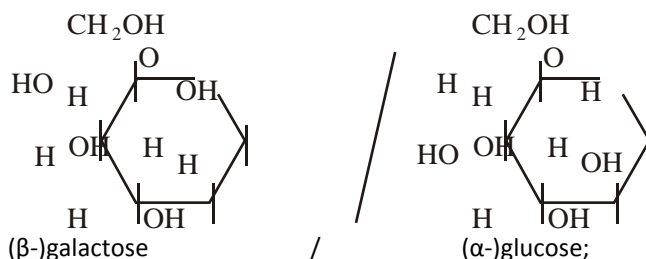
[3]

3. (a)  $\text{CH}_2\text{O}$ ;

1

Accept  $(\text{CH}_2\text{O})_n$ .

(b) (i)



2

Award second mark only if name matches structure.

Do not award second mark if structure is not given.

(ii) (α-) glucose/(β-) galactose;

1

Whichever not given in (b)(i)

(c) energy (sources);

energy storage/formation of glycogen;

precursors of/formation of other biologically important molecules;

2 max

Award [1] each for any two.

Do not accept “to provide structure”.

[6]

4. (a) hormone/steroid;

1

(b) alcohol/hydroxyl (accept alkanol but not hydroxide or OH);

alkene/carbon-carbon double bond;

2

Do not accept  $\text{C}=\text{C}$ .

Do not accept methyl/ $\text{CH}_3$ .

(c) 6;

1

**[4]**

5. vitamin C is water soluble and vitamin A/D is fat soluble;  
vitamin C has 4/several OH groups/vitamin A/D has only 1/fewer OH groups;  
vitamin A/D has large non-polar/hydrocarbon part/chain/ring;  
vitamin C has hydrogen bonding and vitamin A/D has van der Waals' forces;

4

**[4]**